UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

ET Docket No. 10-142

Mr. Julius Knapp
Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Dear Mr. Knapp:

The Federal Communications Commission (FCC) has announced plans to initiate a rulemaking proceeding to accelerate the deployment of terrestrial mobile broadband services in frequency bands allocated to the mobile satellite service (MSS).[1] The National Telecommunications and Information Administration (NTIA) supports this initiative and believes that additional spectrum can be made available for mobile broadband consistent with the recommendations in the National Broadband Plan.[2] NTIA worked closely with the FCC in developing service rules for the licensing and operation of ancillary terrestrial component (ATC) facilities by MSS operators and believes the existing rules can be used as the basis for deploying new wireless broadband systems.[3]

In facilitating the introduction of wireless broadband systems in spectrum used for MSS, we recognize there can be an attendant increase in interference potential to receivers operating in the spectrum used by the Global Positioning System (GPS). The FCC rules specify limits on the radiated power of out-of-band emissions in the 1559-1610 MHz band from ATC base stations and mobile terminals.[4] However, the FCC has agreed to coordinate any ATC authority grant with NTIA, pursuant to the general notification process, to assure adequate protection of GPS services.[5] It should also be noted that the White House has released its National Space Policy

1. Federal Communications Commission News Release, *FCC Spectrum Task Force Announces Plan to Unleash Additional Spectrum for Mobile Broadband* (June 18, 2010).

2. Recommendation 5.8.4 of the National Broadband Plan identifies 90 MHz of spectrum in the following MSS frequency bands that could be made available for terrestrial mobile broadband use: 1525-1559 MHz and 1626.5-1660.5 MHz ("L-Band"), 1610-1626.5 MHz and 2483.5-2500 MHz ("Big LEO Band"), and 2000-2020 MHz and 2180-2200 MHz ("2 GHz Band").

3. MSS ATC consists of terrestrial fixed and mobile stations.

4. For MSS ATC base and mobile stations, the FCC rules specify an equivalent isotropically radiated power density of -70 dBW/MHz for wideband emissions and -80 dBW in a bandwidth of less than 700 Hz for narrowband for discrete emissions in the 1559-1610 MHz band.

5. *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands, Report and Order and Notice of Proposed Rulemaking*, FCC 03-15, 18 FCC Rcd 1962 (2003) (*ATC Report and Order*), modified by Order on Reconsideration, 18 FCC Rcd 13590 (2003), reconsidered in part in *Memorandum Opinion and Order and Second Order on Reconsideration*, FCC 05-30, 20 FCC Rcd 4616 (2005) at ¶ 71.

and a key element of that policy is taking necessary measures to sustain the radiofrequency environment in which critical U.S. space systems operate.[6] Consistent with the Administration's National Space Policy, and with all previous authorizations the FCC has granted for ATC in the MSS bands, we recommend that all broadband fixed and mobile terrestrial stations operating in the 1525-1559 MHz, 1626.5-1660.5 MHz, 1610-1626.5 MHz, 2000-2020 MHz, and 2180-2200 MHz bands suppress the power of any emission in the 1559-1610 MHz band in accordance with the following equivalent isotropically radiated power (EIRP) density limits:

> The EIRP density for mobile terrestrial stations is limited to -95 dBW/MHz for wideband emissions and -105 dBW/kHz for narrowband emissions.
>
> The EIRP density for fixed terrestrial stations is limited to -100 dBW/MHz for wideband emissions and -110 dBW/kHz for narrowband emissions.

The military agencies, the National Aeronautics and Space Administration, the Department of Commerce, and the Department of Energy receive tracking, telemetry, and control data communications that enable control of their spacecraft as well as foreign space agency mission spacecraft in the 2200-2290 MHz band.[7] If additional terrestrial broadband services are permitted in the 2180-2200 MHz band, the FCC must ensure appropriate measures are taken to prevent interference to existing Federal agency satellite operations in the adjacent 2200-2290 MHz band. Consistent with the existing rules for MSS ATC in the 2180-2200 MHz band, we recommend that new broadband terrestrial fixed and mobile stations operating in the 2180-2200 MHz band comply with the out-of-band emission limits and operational restrictions contained in Section 25.252 of the FCC Rules.

In the United States, the radio astronomy service has a co-primary allocation in the 1610.6-1613.8 MHz and 1660-1660.5 MHz bands.[8] These bands are critical for performing spectral line observations and all steps practicable are to be taken to protect radio astronomy stations from harmful interference.[9] Section 25.213 of the FCC Rules specifies inter-service coordination requirements for MSS uplink transmissions in the 1610-1626.5 MHz band with radio astronomy stations in the 1610.6-1613.8 MHz.[10] NTIA believes that protection of radio

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6. National Space Policy of the United States of America (June 28, 2010) available at http://www.whitehouse.gov/sites/default/files/national_space_policy_6-28-10.pdf

7. Federal agencies operate space research and Earth exploration services (space-to-Earth) communications to earth stations and return links via the Tracking and Data Relay Satellite System, which provides links between low earth orbiting spacecraft and earth stations.

8. Radio astronomy operations obtain information about the universe through radio reception.

9. *See* Footnote US 342 of the National Table of Frequency Allocations.

10. Based on the inter-service coordination requirements, the National Radio Astronomy Observatory and the National Ionosphere and Atmospheric Center, funded by the National Science Foundation, completed coordination agreements with MSS operators for terrestrial mobile Earth stations. Coordination agreements have also been completed with MSS system operators for airborne mobile Earth station operations in the 1610-1626.5 MHz band.

astronomy stations operating in the 1610.6-1613.8 MHz and 1660-1660.5 MHz bands from mobile broadband systems can be accomplished utilizing the existing MSS service rules.

The National Oceanic and Atmospheric Administration operates polar orbiting and geostationary satellites that carry Search and Rescue Satellite-Aided Tracking (SARSAT) payloads providing distress alert and location information to appropriate public safety rescue authorities for maritime, aviation, and land users in distress.[11] When an emergency beacon is activated, the signal is received by satellite and relayed to the nearest available Earth station. The SARSAT Earth stations receive information from satellites in the 1544-1545 MHz frequency band. The locations for the SARSAT Earth stations are shown in Table 1.

Table 1.

Earth Station Location	Coordinates
Anderson AFB, Guam	13.5784°N 144.9390°E
Vandenberg AFB, CA	34.6624°N 120.5514°W
Sabana Seca USN, PR**	18.4317°N 066.1922°W
USCG Station, Wahiawa, HI	21.5260°N 157.9964°W
NASA JSC, Houston, TX**	29.5605°N 095.0925°W
Fairbanks, AK	64.9933°N 147.5237°E
Suitland, MD	38.9955°N 076.8513°W
NASA GSFC, MD	38.8510°N 076.9310°W
Florida, TBD*	TBD
* Denotes a future site. ** Denotes a site to be decommissioned.	

Consistent with the existing MSS ATC service rules, the SARSAT Earth stations must be protected from interference if new broadband systems are permitted to operate in the 1525-1559 MHz band.[12]

There is an allocation in the 1530-1544 MHz and 1626.6-1645.5 MHz bands for maritime emergency communication systems used by the U.S. Coast Guard as part of the Global Maritime Distress and Safety System (GMDSS). There is also an allocation in the 1545-1559 MHz and 1646.5-1660.5 MHz bands for aeronautical emergency communication systems in the Aeronautical Mobile-Satellite (Route) Service (AMS(R)S) used by the Federal Aviation Administration during en-route oceanic flights. The protection of the aeronautical and maritime safety services is specified in international footnotes 5.353A, 5.357, 5.362A, and domestic footnotes US 308 and US 315.[13] Because maritime and aeronautical safety communication requires international interoperability as recognized by the International Maritime Organization

11. Russia operates very similar instruments known as Cosmicheskaya Systyema Poiska Avariynich Sudov (COSPAS) aboard satellites that are part of a navigation system. Both are being used in an international cooperative search and rescue effort titled COSPAS-SARSAT. COSPAS-SARSAT consists of a network of satellites, Earth stations, mission control centers, and rescue coordination centers.

12. *See* 47 C.F.R. §25.253(f)(1).

13. Special protections and preemptive access are required for aeronautical and maritime safety services.

and International Civil Aviation Organization, any changes in how the 1530-1559 MHz and 1626.6-1660.5 MHz bands are used must be considered carefully. This includes the requirement for "priority access with real-time preemptive capability" for GMDSS and AMS(R)S, which may be further complicated by the implementation of new broadband uses. As these broadband uses are contemplated for the 1530-1559 MHz and 1626.5-1660.5 MHz bands, the FCC and NTIA must work together to ensure that safety communication services are in no way degraded or limited.

The Open-market Reorganization for the Betterment of International Telecommunications Act (ORBIT Act) adopted in 2000 places certain restrictions on the use of portions of the spectrum allocated for MSS. For example, Section 647 (Satellite Auctions) states that the Commission shall not have the authority to assign by competitive bidding spectrum used for the provision of international or global satellite communications services. Section 624 (Specific Criteria for International Maritime Satellite Organization) also states that the United States shall seek to preserve space segment capacity of the GMDSS. As part of any rulemaking proceeding on using the MSS frequency bands for broadband systems, the FCC should address these and any other issues that are specified in the ORBIT Act.

NTIA filed comments on behalf of the Department of Defense and the Department of Homeland Security in support of expanding Federal Government access to the 1610-1626.5 and 2483.5-2500 MHz MSS bands.[14] These bands are already available for Federal earth stations to operate with non-Federal space stations. NTIA believed that making these bands available for use by Federal MSS satellite systems merely would extend what the national allocation table currently allows. Federal Government use of code division multiple access (CDMA) technology in the portions of the 1610-1626.5 and 2483.5-2500 MHz MSS bands where CDMA is permitted would both minimize disruptions to currently operating systems and allow the Federal Government to take advantage of the significant development work that has already occurred in producing CDMA-based equipment to operate in these bands.[15] Discussions of Federal and non-Federal spectrum sharing spectrum have been ongoing for some time, and continue to progress. Rather than view Federal/non-Federal sharing in a piecemeal fashion (e.g., rulemaking proceeding dedicated to specific bands and technologies), the FCC should continue to work with NTIA and others in the Federal Government to address MSS spectrum sharing issues.[16]

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14. Comments of the National Telecommunications and Information Administration, *In the Matter of Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, L-Band, and the 1.6-2.4 GHz Bands*, IB Docket No. 01-185, *Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.612.4 GHz Bands*, IB Docket No. 02-364, *Report and Order and Notice of Proposed Rulemaking*, FCC 03-15 (June 15, 2003).

15. The existing MSS system operators in the 1610-1626.5 and 2483.5-2500 MHz, Iridium and Globalstar, opposed NTIA's proposal.

16. *In the Matter of Review of Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands*, IB Docket No. 02-364, *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, IB Docket No. 00-258, *Report and Order, Fourth Report and Order and Further Notice of Proposed Rulemaking*, FCC 04-134 (July 16, 2004) at ¶79.

NTIA supports the FCC goal of making spectrum available for the deployment of wireless broadband systems. NTIA believes that if mobile broadband systems are implemented using the existing MSS ATC service rules and agreements, compatible operation with Federal systems is possible while maximizing the use of the available MSS spectrum. However, if the broadband systems to be deployed in the MSS bands require changes to the existing rules, NTIA would have to perform a more detailed review of the impact to Federal systems.

If you have any questions regarding these recommendations please feel free to contact Mr. Edward Davison at 202-482-5526 (edavison@ntia.doc.gov).

Sincerely,

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management